Amendments to the Claims

1. (Original) A warm control rolling method, being a rolling method of manufacturing steel mainly composed of fine ferrite particle texture with average ferrite grain size of 3 μm or less, which comprises,

in the rolling process of one pass or more of rolling in condition where the rolling condition parameter expressed in formula (1)

$$Z = \log\left[\frac{\varepsilon}{t}\exp\left(\frac{Q}{8.31\,(T+273)}\right)\right] \qquad (1)$$

ε: strain

t: duration from start till end of rolling (s)

T: rolling temperature (°C, or average of rolling temperature of each pass in the case of multipass rolling)

Q: 254,000 if mother phase of texture just before rolling is ferrite, bainite, martensite, or pearlite; 300,000 if mother phase is austenite.

is 11 or more (in the case the texture just before rolling is ferrite, bainite, martensite, or pearlite, that is, Fe crystal structure is bcc) or 20 or more (in the case the texture just before rolling is austenite, that is, Fe crystal structure is fcc), and the rolling temperature range is a temperature zone of 350 °C to 800 °C,

rolling under condition that the material temperature upon start of rolling of each rolling process does not exceed the maximun temperature of 800 °C and the material temperature during rolling and right after final rolling (within 1 second) is not 350 °C or lower, and,

rolling so that, in each rolling process, temperature $T_{x\text{-}out}$ right after rolling (within 1 second) is not higher than temperature that is higher than rolling entry temperature $T_{x\text{-}in}$ by 100 °C and the material temperature right after rolling (within 1 second) is not lower than temperature that is lower than the temperature right before rolling by 100°C.

2. (Original) The warm control rolling method of claim 1, being characterized in rolling so that the temperature $T_{x\text{-}out}$ right after rolling in each rolling process is not higher than temperature that is higher than the rolling entry temperature $T_{x\text{-}in}$.by 50°C.

3. (Original) The warm control rolling method of claim 1, being characterized in rolling two or more passes consecutively in rolling temperature range of 350°C to 800°C, wherein the material temperature right after two passes is not higher than temperature that is higher than the material temperature upon start of rolling by 100°C, and not lower than temperature that is lower than the material temperature upon start of rolling by 100°C.

4. (Original) The warm control rolling method of claim 3, being characterized in rolling so that the material temperature right after two passes is not higher than temperature that is higher than the material temperature upon start of rolling by 50°C.

5. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 4~~ claim 1, being characterized in rolling in rolling temperature range of 400°C to 500°C.

6. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 5~~ claim 1, where in Z is 12 or more and, being characterized in manufacturing steel with mainly composed of texture with average ferrite grain size of 1 μm or less.

7. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 6~~ claim 1, being characterized in starting rolling, in consecutive multipass rolling, by waiting until the rolling entry temperature $T_{x+1\text{-}in}$ of X+1-th pass becomes $Ts+20 \geq T_{x+1\text{-}in}$ when the rolling temperature $T_{x\text{-}out}$ right after X-th pass is higher than the rolling set temperature Ts.

8. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 7~~ claim 1, being characterized in measuring the processing heat generation T_{xH} at X-th pass in multipass rolling beforehand, and defining the rolling entry temperature $T_{x\text{-}in}$ in the relation of $T_{xs} \geq T_{x\text{-}in} \geq T_{xs} - $ ~~$T_{x\text{-}H}$~~ T_{xH}, supposing T_{xs} to be rolling set temperature.

9. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 8~~ claim 1, wherein the total reduction area in continuous rolling is 50% or more.

10. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 9~~ claim 1, wherein the plastic strain, or the strain converted into true strain from the reduction of area is 1.5 or more.

11. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 10~~ claim 1, being characterized in introducing the strain by multidirectional processing.

12. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 11~~ claim 1, being characterized in controlling the temperature range before and after rolling by setting the rolling speed and the draft of each pass.

13. (Currently amended) The warm control rolling method of ~~any one of claims 1 to 12~~ claim 1, wherein the continuous rolling further comprises a step of reheating in the midst of rolling for compensating for temperature drop of material, and a step of cooling in the midst of rolling for suppressing temperature rise of material.

14. (New) The warm control rolling method of claim 2, being characterized in rolling in rolling temperature range of 400°C to 500°C.

15. (New) The warm control rolling method of claim 3, being characterized in rolling in rolling temperature range of 400°C to 500°C.

16. (New) The warm control rolling method of claim 4, being characterized in rolling in rolling temperature range of 400°C to 500°C.

17. (New) The warm control rolling method of claim 2, where in Z is 12 or more and, being characterized in manufacturing steel with mainly composed of texture with average ferrite grain size of 1 μm or less.

18. (New) The warm control rolling method of claim 3, where in Z is 12 or more and, being characterized in manufacturing steel with mainly composed of texture with average ferrite grain size of 1 μm or less.

19. (New) The warm control rolling method of claim 4, where in Z is 12 or more and, being characterized in manufacturing steel with mainly composed of texture with average ferrite grain size of 1 μm or less.

20. (New) The warm control rolling method of claim 5, where in Z is 12 or more and, being characterized in manufacturing steel with mainly composed of texture with average ferrite grain size of 1 μm or less.